

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPLICATION FOR U.S. LETTERS PATENT**

Title:

CURATIVE AIR-CONDITIONING DEVICE

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CURATIVE AIR-CONDITIONING DEVICE

FIELD OF THE INVENTION

[0001] The invention relates to a curative air-conditioning device with a housing comprising a water reservoir that feeds an apparatus for concentrating the air with water in order to generate a moist air flow that is transported, in particular with the assistance of a blower, through the housing, and with an ionization apparatus for the release of ions.

BACKGROUND OF THE INVENTION

[0002] A curative air-conditioning device containing a housing that has an ionization apparatus arranged inside it is known in the art from the German first publication DE 100 54 562 A1. The ionization apparatus is arranged in a separate space intended for receiving electronic components inside the housing. The first publication does not state where the ions generated by way of the ionization apparatus are released to.

BRIEF SUMMARY OF THE INVENTION

[0003] It is the object of the present invention to provide a curative air-conditioning device of the type described at the outset that will create a better climate environment than conventional devices.

[0004] The object is achieved with the curative air-conditioning device that features the characteristics of patent claim 1. Preferred embodiments of the curative air-conditioning device are disclosed in the sub-claims.

[0005] The curative air-conditioning device is equipped with a housing that comprises a water reservoir. The water reservoir can be realized as a separate component, but it can also be integrated as part of the housing. The water reservoir is used to receive water; and said water, in turn, serves to concentrate the water in the air flow. It is possible, for example, for water drops to form in a water distribution pipe, which is supplied with water from the water reservoir via a pump, and several water passage openings are envisioned on the bottom side of the pipe. However, the use of other evaporation or nebulization apparatuses is also possible in order to concentrate the water in the air flow. The water is atomized in the air flow that is transported through the housing. The resulting aerosol/air mixture is transported from the housing into the environment. Negative ions are generated, in particular, in the ionization apparatus. These ions enter the air flow that is guided through the housing. On the one hand, the added ions are used to clean the air flow. On the other hand, a portion of the ions is transported, together with the air flow, out of the housing and into the environment developing its cleaning action there.

[0006] A preferred embodiment of the curative air-conditioning device is characterized by the fact that the ionization apparatus is arranged inside the housing. This provides the advantage that the ionization apparatus is protected from undesired external interference.

[0007] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that at least one ion-releasing apparatus is arranged inside the housing in the area of the air flow. This way,

it is ensured that the released ions reach the air flow that is guided through the housing.

[0008] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that the ion-releasing apparatus is arranged in an air guide channel. This way, it is ensured that the released ions only enter the air flow that is guided through the housing.

[0009] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that at least one ion-releasing element, which is connected to the ionization apparatus, is arranged externally on the housing. The release of the ions outside of the housing provides the advantage of enhanced air cleaning action.

[0010] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that the ion-releasing element is attached externally on the housing in such a way that the air flow, which is transported through the housing, is loaded with negative ions, in particular outside of the housing. On the one hand, this ensures additional cleaning of the air flow and, moreover, the air flow is instrumental in distributing the ions throughout the environment.

[0011] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that the ion-releasing element is arranged in the area of at least one exit opening for the air flow from the housing. Preferably, the ion-releasing element is arranged directly on the

edge of the exit opening. This way, it is ensured that a considerable part of the generated ions reaches the air flow.

[0012] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that the ion-releasing element is arranged above the exit opening for the air flow from the housing. This is the arrangement that produced the best results in the studies that were conducted in connection with the present invention.

[0013] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that the ionization apparatus is arranged above the water reservoir. This way, any chance that the ionization apparatus may come into contact with water that exits the water reservoir is safely prevented.

[0014] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that an intermediate floor is arranged between the ionization apparatus and the water reservoir. The intermediate floor closes the water reservoir off toward the top and thereby protects the ionization apparatus from any water that may spill from the reservoir.

[0015] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that a radiation apparatus is arranged between the water reservoir and the intermediate floor. The radiation apparatus preferably emits UV-C-radiation that is used to kill any germs or bacteria that may be in the water.

[0016] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that a recess is envisioned in the intermediate floor for receiving the radiation apparatus. Instead of a recess it is also possible to envision a corresponding pocket in the intermediate floor suitable for securing the radiation apparatus.

[0017] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that a cover is envisioned on the side of the radiation apparatus that is pointed away from the water reservoir. Meanwhile, the radiation-emitting part of the radiation apparatus is arranged on the side that is directed towards the water reservoir. The electrical connections of the radiation apparatus are arranged on the side that is opposite to the cover in order to prevent the electrical connections from coming into contact with the water.

[0018] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that the cover is modeled in one piece with the intermediate floor. In terms of manufacturing-specific considerations, this approach has proved particularly advantageous.

[0019] Another preferred embodiment of the curative air-conditioning device is characterized by the fact that the intermediate floor is realized as a molded injection part made of plastic. This ensures that the manufacture of the curative air-conditioning device is particularly cost-effective.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] Further advantages, characteristics and details of the invention can be derived from the subsequent description explaining, while referring to the drawings, one embodiment of the invention in detail. Shown are in:

[0021] Figure 1 a schematic depiction of a curative air-conditioning device in an open state and seen in a front view;

[0022] Figure 2 the curative air-conditioning device from figure 1 in a closed state;

[0023] Figure 3 a partial section of a curative air-conditioning device in accordance with another embodied example; and,

[0024] Figure 4 a front view of a curative air-conditioning device in accordance with another embodied example.

DETAILED DESCRIPTION OF THE INVENTION

[0025] Figure 1 describes a housing 1 as a whole. The housing 1 can be fashioned, for example, of metal or of plastic. In figure 1, the front wall of the housing 1 is omitted to make the inside of the housing 1 visible. A water reservoir 2 is arranged in the lower area of the housing 1. The intermediate floor 4 limits the water reservoir 2 on its top side.

[0026] A recess 6 is envisioned in the intermediate floor 4. The base of the UV-C-radiator 8 extends through the area of the recess 6. The base of the radiator 8 is fastened to a cover 10, and the cover 10 is modeled in one piece with the intermediate floor 4. The connections 12 of the radiator 8 extend through the cover 10. The cover 10 ensures that no water from the reservoir 2 will be able to reach the connections 12 of the radiator 8.

[0027] A blower housing 14 is envisioned above the intermediate floor 4. A blower (not shown here) is arranged inside the blower housing 14 transporting air from the environment through the back wall of the housing to an exit opening 16 of the blower housing 14.

[0028] An apparatus 17 suitable to cause water drops to form is arranged above the blower housing 14. The apparatus 17 is connected via a line (not shown here) to a pump (also not shown here) serving to transport water from the reservoir 2 to the apparatus 17.

[0029] An ionization apparatus 18 is arranged above the apparatus 17 intended to cause the formation of water drops. The ionization apparatus 18 is used to generate negative ions.

[0030] In figure 2, a front housing wall 20 serves to close off the housing 1. A cut-out 22 is realized in the front housing wall 20. The air flow that is transported through the housing 1 via assistance of the blower is concentrated with water drops using the apparatus 17 and exits the housing 1 at the exit opening 22. The purpose of the apparatus 17 consists in moistening the air flow. But the moistening of the air flow can also be achieved in

different ways, such as, e.g., by way of using a water-soaked textile through which the air flow passes.

[0031] Three ion-releasing elements 24, 25 and 26 are arranged at equal distances relative to each other and in a line above the exit opening 22 in the front housing wall 20. The ion-releasing elements 24 to 26 feature needle-shaped bodies the tips of which are aligned correspondingly in that they point to the environment. The ions generated in the ionization apparatus 18 exit through these tips.

[0032] The negative ions released by the ion-releasing elements 24 to 26 enter the air flow that leaves the housing through the exit opening 22. It is also possible to arrange the ion-releasing elements inside the housing. The crucial aspect consists in the ions being added to the air flow or the air-mist flow.

[0033] The UV-C-radiator 8 is arranged above the water reservoir 2 in such a way that the total of the water surface can be irradiated in order to kill off any germs or bacteria that may be contained therein. It is also possible to arrange several radiators instead of just one radiator 8 above the water surface.

[0034] Figure 3 represents a partial section of a curative air-conditioning device. The curative air-conditioning device comprises a housing 31 including an air guide channel 32 that is arranged inside the housing. The air guide channel 32 is fed by way of a corresponding apparatus (not shown here) with moist air. The moist air is transported, utilizing the

assistance of a blower 34, through the air guide channel 32 and out of the housing 31, as indicated by way of the arrows 35 and 36. An ion-releasing apparatus 38 that is connected to an ionization apparatus (not shown here) is arranged inside the air guide channel 32. The ion-releasing apparatus 38 is used to release ions into the air flow that is guided through the air guide channel 32.

[0035] Figure 4 is a front view of a curative air-conditioning device, which can also be the curative air-conditioning device that was represented in figure 3. But since it may also be a curative air-conditioning device other than the one seen in figure 3, we are not using the identical reference symbols for identical parts. The curative air-conditioning device that is depicted in figure 4 comprises a housing 41 featuring an air exit opening 42 which, in turn, is partially covered with an air-permeable screen 43. An ion-releasing apparatus 48 is arranged in the area of the air exit opening 42. The ion-releasing apparatus 48 is connected to an ionization apparatus on the inside of the housing 41. The purpose of the ion-releasing apparatus 48 consists in adding ions to the air flow exiting the air exit opening 42. Another ion-releasing apparatus (not shown here) can be arranged inside the housing 41, as shown, e.g., in the embodiment represented in figure 3.